IN THE CLAIMS:

1. (Currently amended) ~~A diagnostic system, comprising:~~

~~a handpiece and control system; and~~

~~means for determining tissue type and state, wherein said means are operatively connected to said handpiece~~

A diagnostic system for determining the properties of a sample, comprising:

a probe that includes:

a probe shaft comprising a proximal end and a distal end, wherein said proximal end is mounted to a support that comprises a key-opening;

at least one first fiber optic that traverses the length of the inside of said probe shaft;

a first core material holding said at least one first fiber optic in place within said probe shaft; and

a first connector element fixedly attached to said support; and

a handle that includes:

a handle shaft having a proximal end and a distal end;

at least one second fiber optic traversing the length of the inside of said handle shaft;

a second core material holding said at least one second fiber optic in place within said handle shaft;

a key fixedly attached to said handle shaft, wherein when said key is inserted into said key-opening, said at least one first fiber optic is in optical alignment with said at least one second fiber optic; and

a second connector element fixedly attached to said handle shaft, wherein said first connector element and said second connector element are connectable together.

2. (New) The system of claim 1, wherein said support further comprises a sheath passageway, wherein said system further comprises:

a slidable sheath over said cylindrical shaft, said sheath having an opening at its distal end for passage of a portion of said probe shaft, wherein said slidable sheath is positioned to slide through said sheath passageway;

a sliding piece slidably mounted to said handle shaft, wherein said sliding piece can slide from a starting position relatively near said distal end of said shaft to an ending position relatively near said proximal end of said shaft;

means for exerting a biasing force on said sliding piece that biases said sliding piece to remain at said starting position in the absence of a counter force greater than said biasing force, wherein said slidable sheath comprises a sheath proximal surface that contacts said sliding piece when said key is inserted into said key-opening, wherein when said probe shaft is inserted into a testing medium, said sheath will exert said counter force and move said sliding piece in proportion to the depth that said probe shaft enters said testing medium; and

a position sensor positioned to sense the position of said sliding ring.

3. (New) The system of claim 2, wherein said sliding piece comprises a sliding ring.

4. (New) The system of claim 2, wherein said means for exerting a biasing force comprises a spring.

5. (New) The system of claim 2, wherein said position sensor is selected from the group consisting of a potentiometric sensor, an optical sensor and a capacitive sensor.

6. (New) The system of claim 1, wherein said probe shaft comprises a cylinder, wherein said distal end is sharpened.

7. (New) The system of claim 1, wherein said probe shaft comprises an electrically conductive material.

8. (New) The system of claim 1, wherein said probe shaft comprises a hypodermic needle.

9. (New) The system of claim 1, wherein said at least one first fiber optic

or said at least one second fiber optic are selected from the group consisting of a single mode fiber optic and a multimode fiber optic.

10. (New) The system of claim 1, wherein said handle shaft comprises a cylinder.

11. (New) The system of claim 1, wherein said first core material and said second core material comprise the same material.

12. (New) The system of claim 1, wherein said first core material and said second core material comprise biocompatible material.

13. (New) The system of claim 12, wherein said biocompatible material is selected from the group consisting of polyurethane, polyethylene, glass and ceramic.

14. (New) The system of claim 1, further comprising biocompatible glue or epoxy as a bonding agent to bond together said at least one first optical fiber, said first core material and said probe shaft.

15. (New) The system of claim 1, further comprising a force sensor operatively connected to said handle shaft to measure the force applied at the distal end of said handle shaft.

16. (New) The system of claim 15, wherein said force sensor is selected from the group consisting of a strain gauge, a tactile sensor and a piezoelectric force sensor.

17. (New) The system of claim 1, further comprising a control unit connected to said handle by a cable that includes at least one third fiber optic operatively connected to said at least one second fiber optic, wherein said control unit includes an input device, a display, a light source, means for inputting light from said light source into said at least one third fiber optic, means for collecting light that returns through said at least one third fiber optic to said control unit and means for analyzing the collected light to determine a property of said sample.

18. (New) The system of claim 17, wherein said at least one second fiber optic comprises a length of fiber optic within said handle shaft, wherein said at least one third fiber optic comprises a length of fiber optic within said cable, wherein said length of fiber optic within said handle shaft together with said length of fiber optic within said cable comprise at least one integral, undivided length of fiber optic.

19. (New) The system of claim 1, wherein said at least one second fiber optic comprises a grin lens at its distal end.

20. (New) The system of claim 1, wherein said probe shaft further comprises at least one first electrical conductor that traverses the length of said probe shaft, wherein said handle shaft further comprises at least one second electrical conductor that traversed the length of said handle shaft, wherein said at least one first electrical conductor will be in electrical contact with said at least one second electrical conductor when said key is inserted into said key-opening.

21. (New) The system of claim 20, further comprising a control unit connected to said handle by a cable that includes at least one third fiber optic operatively connected to said at least one second fiber optic, wherein said control unit includes an input device, a display, a light source, means for inputting light from said light source into said at least one third fiber optic, means for collecting light that returns through said at least one third fiber optic to said control unit and means for analyzing the collected light to determine a property of said sample, wherein said control unit further includes a source of electrical energy, means for inputting said electrical energy from said source of electrical energy into said at least one second electrical conductor, means for collecting electrical energy and means for analyzing the collected electrical energy to determine a property of said sample..

22. (New) The system of claim 17, further comprising an electronics board operatively fixed within said handpiece to organize a signal from said sliding piece and communicate said signal to said control unit.

23. (New) The system of claim 17, further comprising a force sensor operatively connected to said handle shaft to measure the force applied at the distal end of said handle shaft, further comprising an electronics board operatively fixed within said handpiece to organize a signal from said force sensor and communicate said signal to said control unit.

24. (New) The system of claim 17, further comprising a reference fiber optic that extends from said control unit through said cable and into said handpiece, wherein said reference fiber optic has a coated distal end comprising a reflective coating.